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Melatonin and its role in oxidative stress related diseases of oral cavity.

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The role of the oral cavity in the pathogenesis of diseases of various systems such as the gastro-intestinal tract (GIT), cardiovascular and immune systems has been recently evaluated. While initially the oral cavity was considered to be mainly a source of various bacteria, their toxins and antigens, recent studies showed that it may also be a location of oxidative stress and periodontal inflammation. Accordingly, this review focuses on the involvement of melatonin (MT) in oxidative stress diseases of oral cavity as well as on potential therapeutic implications of MT in dental disorders, especially in periodontal inflammation. MT is generated and released by pineal gland and by entero-endocrine (EE) cells located in the GIT. The pattern of MT secretion from the pineal gland is controlled by an endogenous circadian timing system that conveys information about the light/dark cycle to various organs of the body, thereby organizing its seasonal and circadian rhythms. The secretion of MT from the EE cells of GIT is related mainly to feeding periods. MT is a non-toxic highly lipophilic indole, and this feature facilitates its penetration through cell membranes and its compartments. However, the most important effect of MT seems to result from its potent antioxidant, immuno-modulatory, protective and anti-cancer properties. It stimulates synthesis of type I collagen fibers and promotes bone formation. Thus, MT could be used therapeutically for instance, locally, in the oral cavity damage of mechanical, bacterial, fungal or viral origin, in post-surgical wounds caused by tooth extractions and other oral surgeries and, in helping bone formation in various auto-immunological disorders such as Sjorgen syndrome, in periodontal diseases, and in oral cancers.

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